

NOTE

PARATROPES BILUNATA (ORTHOPTERA: BLATTIDAE):
AN OUTCROSSING POLLINATOR IN A NEOTROPICAL
WET FOREST CANOPY ?

Ongoing controversy and speculation surround discussions of how canopy plants outcross. Scant studies are available which show cockroaches to be pollinators (Proctor, M. and Yeo, P. 1972. *The Pollination of Flowers*. Taplinger Pub. Co., New York) and there are no observations on cockroaches as pollinators of canopy plants. I report here on such activity by *Paratropes bilunata* (Saussure and Zehntner) (identification by F. W. Fisk at Ohio State University, who holds the specimen) in an undisturbed Lowland wet forest at Finca La Selva, near Puerto Viejo, Heredia Province, Costa Rica. A new method of tree-climbing was used to gain access to the region of the canopy where the observations were made (Perry, *Biotropica*, in press).

Little is known about the biology of *P. bilunata* or the genus. Biolley (1900. IV Ortópteros recogidos en Costa Rica desde 1890 á 1900. Informe Nacional Costa Rica. Pp. 40-49.) did note that some *Paratropes* species are found inactive during the day under the leaves of certain small trees and can be confused with beetles of the family Lycidae. This confusion may be in part due to a striking coloration which is characteristic of many species in the genus, including *P. bilunata*.

At 1200 hours on 24 June 1976 a *P. bilunata* was seen walking in full sunlight 34 m above the ground on an inflorescence of *Dendropanax arboreus* (L.) Dec. & Planch. Rev. Hortic. (Araliaceae), an arboreal epiphyte within the crown of a *Dipteryx panamensis* (Pitt.) Record & Mell (Leguminosae). It flew successively to three nearby inflorescences over a period of several minutes without returning to a previously visited area. An attempt to net it failed, after which there were no new sightings for the remainder of the observation period which lasted one hour.

Subsequently, at 1030 hours, on 25 June, a *P. bilunata* was again seen visiting the same group of inflorescences. Its behavior was similar to the previous individual. This time, however, the cockroach was caught. Again, no other *P. bilunata* were seen for the duration of the observations which lasted for about an hour. Finally, at 1400 hours, on 3 July another *P. bilunata* was seen at the same location after it behaved similarly to the above.

Interestingly, no *P. bilunata* (adult or nymph) were ever seen at any place other than the inflorescences and proximal leaves of *D. arboreus*, even though numerous inflorescences of *Dipteryx* were present nearby.

The exposed condition of the anthers and stigmas of this plant allows *P. bilunata* to be a likely pollinator, of which the plant has many. More important, the behavior of *P. bilunata* together with the total absence of a resident population in the canopy area and the temporal distribution of sightings suggest that this species may range between a number of *Dendropanax* individuals and thus could be an outcrosser of this canopy epiphyte.

The total length of the pronotum and tegmina of the specimen is 25 millimeters. Two large cream-yellow spots are on the anterior lateral portion of a totally black pronotum. These spots are connected by a very narrow band along the anterior medial edge of the pronotum. The tegmina, when closed, are symmetrically colored. Starting laterally and going medially the tegmina are marked with first a reddish-brown longitudinal band, the anterior portion of which bears a cream-yellow spot. A black band is medial to this, followed by a reddish-brown axial band. Precisely how this patterning relates to the observations is not clear but since *P. bilunata* was diurnally active and visible to potential predators such as birds some significance may be found.

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NOTE

CEROPLASTES DENUDATUS, JUNIOR SYNONYM OF *C. RUSCI* (HOMOPTERA: COCCOIDEA: COCCIDAE)

The syntypes of *Ceroplastes denudatus* Cockerell (1893. Entomologist 26:82) from Antigua agree closely with specimens of *Ceroplastes rusci* (L.) (1758. Syst. Nat. Ed. 1:456) as currently recognized. Some syntypes of *C. denudatus* have spiracular setae in a complete marginal row between the anterior and posterior spiracular depressions on each side. Interspersed between these setae in the median part of the row are few bristlelike setae. The other syntypes, however, are similar to *C. rusci* in having two or more bristlelike setae separating the anterior and posterior spiracular setae.

According to Lindinger (1936. Entomol. Zaharb. 45:154), *C. denudatus* Green (nec Ckll) (1923. Bull. Entomol. Res. 14:88) from Madeira is equal to *C. rusci* (L.) Sign., thus implying that the *C. denudatus* Cockerell determined by Green was different from Cockerell's species. However, Green (op. cit. 94) based his determination on type-material of *C.*